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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,247	01/04/2002	Scott K. Reynolds	YOR920010342US1 (590.070)	9299

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FERENCE & ASSOCIATES
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EXAMINER	
WEST, LEWIS G	

ART UNIT	PAPER NUMBER
2682	

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/039,247	REYNOLDS, SCOTT K.	
	Examiner	Art Unit	
	Lewis G. West	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,14 and 15* is/are rejected.

7)☒ Claim(s) *10-13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 6-9 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nilson (USS 6,369,658) in view of Andrys (US 6,057,714).

Regarding claim 1, Nilson discloses a demodulator comprising: an input arrangement which accepts an input signal; an active balun circuit which amplifies the input signal and converts the input signal to differential form; said active balun circuit comprising a negative shunt feedback arrangement (Col. 4 lines 9-25; Col. 5 lines 7-16) and driving transceiver circuitry, but does not expressly disclose driving a mixer. Andrys disclose a demodulator including at least one mixer (4); an active balun circuit being adapted to drive said at least one mixer (Figure 1). Therefore it would have been obvious to one of ordinary skill in the art at the

time of the invention to drive a mixer, a mixer being a necessary part of a transceiver, and apply the benefits of the feedback arrangement of the balun of Nilson to a demodulator that could share current and be built on a common IC.

Regarding claim 2, the combination of Nilson and Andrys discloses the demodulator according to claim 1, wherein said negative shunt feedback arrangement is adapted to apply variable gain in said at least one mixer. (Andrys, Col.3 lines 1-12)

Regarding claim 3, the combination of Nilson and Andrys discloses the combination of Nilson and Andrys discloses the demodulator according to claim 1, wherein said negative shunt feedback arrangement is adapted to provide stabilized input impedance. (Nilson, Col. 5 lines 8-17)

Regarding claim 6, the combination of Nilson and Andrys discloses the demodulator according to claim 1, wherein said active balun circuit further comprises: a transistor, wherein said negative shunt feedback arrangement connects between the collector and base of said transistor. (Figure 3; Col. 4 lines 9-38)

Regarding claim 7, the combination of Nilson and Andrys discloses the demodulator according to claim 1, wherein said active balun circuit further comprises: an inverting output; wherein said negative shunt feedback arrangement interconnects said input arrangement with said inverting output. (Figure 1; Col. 4 lines 9-38)

Regarding claim 8, the combination of Nilson and Andrys discloses the demodulator according to claim 7, wherein said active balun circuit further comprises: a transistor; wherein said negative shunt feedback arrangement connects between the collector and base of said

transistor in interconnecting said input arrangement with said inverting output. (Figure 1; Col. 5 lines 7-16)

Regarding claim 9, the combination of Nilson and Andrys discloses the demodulator according to claim 7, wherein said active balun circuit further comprises: a non-inverting output; and a compensating arrangement adapted to ensure approximately equal loading on said inverting and non-inverting outputs. (Figure 1; Col. 4 lines 42-57)

Regarding claim 14, the combination of Nilson and Andrys discloses the demodulator according to claim 1, whereby overall distortion is reduced via said negative shunt feedback arrangement. (Nilson, Col. 6 lines 24-30)

Regarding claim 15, the combination of Nilson and Andrys discloses the demodulator according to claim 1, wherein said demodulator is adapted for incorporation into a radio-frequency front end of a cellular telephone handset. (Andrys, Col. 3 lines 1-12)

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nilson in view of Andrys and further in view of Bickley et al (US 6,088,581)

Regarding claim 4, the combination of Nilson and Andrys discloses the demodulator according to claim 1, but does not disclose output to two mixers. Bickley discloses a balun circuit output to two mixers with differential inputs that are adapted to provide differential outputs. (Figure 1 Col. 2 line 52-Col. 3 line 35) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to output to two mixers to provide stabilized input impedance to a direct conversion receiver circuit.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nilson in view of Andrys and further in view of Hageraats (US 6,704,559).

Regarding claim 5, the combination of Nilson and Andrys discloses the demodulator according to claim 1, but does not expressly disclose using RC feedback. Hageraats discloses an input stage of a circuit wherein said negative shunt feedback arrangement comprises a resistor and a capacitor in series (Col. 2 lines 11-37). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a resistor and capacitor in series as a negative shunt feedback arrangement as an alternate way to provide stabilized input impedance and improve circuit linearity.

Allowable Subject Matter

Claims 10-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 10, the prior art does not teach the specific compensating arrangement in the context claimed. When incorporating all the limitations of the base claim and any intervening claims, none of the prior art discloses the features as claimed.

Regarding claim 11, the prior art does not teach reducing the amplitude of an inverting output more that that of a non-inverting output in the context claimed. When incorporating all the limitations of the base claim and any intervening claims, none of the prior art discloses the features as claimed.

Regarding claim 12, the prior art does not teach an output load tuning arrangement with in the context claimed with the specified connections. When incorporating all the limitations of the base claim and any intervening claims, none of the prior art discloses the features as claimed.

Regarding claim 13, the prior art does not teach an output load tuning arrangement with in the context claimed with the specified connections. When incorporating all the limitations of the base claim and any intervening claims, none of the prior art discloses the features as claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fong (US 6,147,559) also demonstrates the improvement in impedance gained form a shunt RC feedback. Ito (US 6,252,460 B1) demonstrates a state of the art balanced to unbalanced circuit and Lin (US 2002/0187768 A1) also demonstrates a balun circuit that is applied to the input of a mixer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis G. West whose telephone number is 571-272-7859. The examiner can normally be reached on Monday-Friday 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on 571-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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NICK CORSARO
PRIMARY EXAMINER